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RUMEX THYRSIFLORUS NEW TO NORTH AMERICA

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IN connection with his studies on the North American representatives of the genus *Rumex*, Rechinger (1937) predicted that the Eurasiatic species *Rumex thyrsiflorus* Fingerh. could be expected to occur on the North American continent. He concluded this from the fact that he had seen a single collection of the species from Haiti and it was unlikely that this plant from northern and eastern Europe and central Asia had been introduced only to this subtropical region in the New World. This prediction can now be verified, because the plant has been found by the present writers to be thoroughly naturalized in a restricted but rather wide area in and around Levis County on the southern shore of the St. Lawrence estuary opposite Quebec City, and on the eastern and southern parts of the Ile d'Orléans. The species grows in abundance near roadsides and in fields within this area, and it also occurs around Quebec City at least north to St. Joseph in the county of Charlevoix.

It was unfortunate that Rechinger (1937) did not study the *Rumex* material of the Marie-Victorin Herbarium of the University of Montreal when he made his investigations on the American species of the genus. Had he done so his prediction would have been superfluous since the herbarium already included four collections of the species from the province of Quebec and one from Ontario. The first of these collections from Quebec was made by Frère Marie-Victorin (No. 15764) on Ile d'Orléans on August 16, 1922, and on the label he remarks: "Partout dans les champs, St. Laurent de l'Ile d'Orléans et dans tous les

environs de Québec.” The other three collections from Quebec available prior to the work of Rechinger were all collected within the same area east and west of the estuary, but a further collection, from St. Joseph in Charlevoix County, was made in 1937 by Bernard Boivin (Nos. 1068, 1125, 1126). Of course, all collectors regarded the plant as *Rumex Acetosa* only, and it was reported under that name by Marie-Victorin (1935).

It is evident from the occurrence of *Rumex thyrsiflorus* in the Quebec region that it is an old and very well established introduction, and it may even have been cultivated at some time (cf. Marie-Victorin, 1935). But although it was old near Quebec in 1922 when first observed by Frère Marie-Victorin, it may have been introduced much earlier in other regions, where it has probably not met the same ideal conditions for survival and dispersal. This suggestion is based on the fact that in the Marie-Victorin Herbarium is a specimen collected by J. Macoun in July of 1871 in Harting County in Ontario, where it grew “sparingly in meadows” at that time. And it has recently (1948) been collected from piles of stone and gravel near a ferry dock at St. Ignace in Mackinac County in Michigan by Rogers McVaugh (No. 9297). It is probably introduced occasionally to places having commercial connection with north-western Europe.

Rumex thyrsiflorus belongs to the *Acetosa* subgenus, which, because of its morphological and biological distinctness, is often regarded as a genus of its own (cf. Löve & Löve, 1948; Löve, 1954). It is a dioecious plant of the section and subsection *Acetosa* (cf. Löve & Sarkar, 1956), closely related to the likewise introduced *Rumex Acetosa* L. and *Rumex ambiguus* Gren. and the indigenous *Rumex alpestris* (Scop.) Löve (cf. Löve, 1944, 1954). The distribution in Eurasia is definitely continental, although the taxon reaches oceanic regions in southern Scandinavia and the Netherlands in the west and in the Russian Arctic in the north (cf. Löve, 1944; Hultén, 1950; Lawalrée, 1953). According to Hultén (1950) the species belongs to the group of West-Siberian continental plants which have dispersed to Scandinavia via both the Baltic countries and Denmark, and it is not known to occur in most of France or in Britain.

Morphologically, the dioecious species of the section and sub-

section *Acetosa* are most easily distinguished from other American *Rumices* by their much enlarged fruit valves without grains, and the hastate or sagittate leaves. They are not easily confused with any of the two introduced or two indigenous species of the dioecious subgenus *Acetosella*, nor are they very similar to the other dioecious American representatives of subgenus *Acetosa*, namely the monotypic endemic southeastern subsection *Americanae* and the likewise monotypic western section *Paucifoliae* (cf. Smith, 1955; Löve & Sarkar, 1956). The valves are never much enlarged in *Acetosella*, which shares with *Americanae* the small and distinctly hastate leaves with rather large basal lobes clearly directed outwards and upwards, while the leaves of *Paucifoliae* lack basal lobes. All the species of the subsection *Acetosa*, however, are characterized by rather large cordate-oblong or spear-shaped leaves with the relatively small basal lobes directed either downwards or slightly outwards.

Although Rechinger (1937) reported only one species of this group from North America and predicted the discovery of another, four species of the subsection *Acetosa* do actually occur on this continent. As shown by Löve (1944) and Hultén (1944), the circumpolar arctic-subarctic species *Rumex alpestris* (Scop.) Löve is indigenous in Greenland and in Alaska and the northern Rockies, and it is also met with in the Yukon Territory (D. Löve & Freedman, 1956). Probably all the plants of *Rumex Acetosa* from Alberta and British Columbia studied by Rechinger (1937) were in fact this indigenous species. The taxon is perhaps to be expected also from Labrador and Newfoundland and other subarctic and alpine areas in eastern North America, although the only specimen from the eastern alpine regions seen by the writers, which possibly could represent this species (from Nova Scotia), is doubtful. All other specimens from these regions seen by the writers belong, however, to the typical *Rumex Acetosa* from Eurasia. That taxon occurs occasionally as a waif here and there on the continent, but seems to be fairly well established, though not aggressive, in easternmost Canada and New England. It is abundant in some maritime localities rich in nitrogen in the Gaspé peninsula. *Rumex thyrsoflorus* is known only from the regions mentioned above, but the fourth species, *Rumex ambiguus* Gren., is a garden

plant in a few places in eastern Canada and occasionally escapes cultivation. It is widely cultivated in Europe, especially in France, from where it may have been introduced as a vegetable long ago.

The species *Rumex thyrsiflorus* is characterized by a very thick and long and strong tap-like rootstock, from which a large rosette of leaves and a great number of stems emerge. The stems are usually about 80–100 cm. tall, varying between the extremes 40 and 160 cm. depending on the conditions, and the female plants, which always predominate in number, are on the average 20–40 cm. taller than the male individuals. The ochrea on the stem is laciniate. The leaves on the stem are usually narrower and shorter than the basal leaves, but the latter are always much narrower in *Rumex thyrsiflorus* than in the other species of the group, varying between four and fourteen times longer than broad, narrow lanceolate and practically spear-shaped, thick and dark green and frequently with crispate margins. Their basal lobes are rather long and narrow and protrude outwards and downwards. The inflorescence is repeatedly branched and forms a dense tuft. The fruit valves are about 3–4 mm. long, i.e. distinctly smaller than in the other species of the subsection, only slightly colored by anthocyanin before maturing, and the achene is shining dark brown. Cytologically, the species is similar to the other related taxa as to its number of chromosomes, $2n=14$ in the females and 15 in the males, the differences being caused by the peculiar sex chromosomes, XX in the females and XYY in the males. There are, however, slight morphological differences between the autosome complements in all the species, a fact to be reported in detail elsewhere.

The separation of the four species met with on this continent may be facilitated by aid of the following key of their essential differences:

- A. The ochrea entire, or laciniate only in its upper part on mature specimens.
An early flowering northern plant with a simply branched panicle with usually strongly reddish colored valves about 4–5 mm. long. The leaves are one to six times longer than broad, rarely almost circular, with the basal lobes directed downwards and inwards; plants with small, thick, and dark green or reddish leaves are typical of exposed places or high-alpine habitats, while in more protected localities the

leaves are large and thin and light green.. **Rumex alpestris** (Scop.) Löve
(Syn.: *Lapathum alpestris* Scop., *Rumex arifolius* auct., *Rumex montanus* Desf.).

A. The ochrea laciniate also on young stems.

B. Early flowering plants with a simply branched panicle and only slightly colored valves about 4–5 mm long. The leaves are dark green and fairly thick, two to six times longer than broad, with the basal lobes directed downwards..... **Rumex Acetosa** L.

B. Later flowering plants with a repeatedly branched and usually very dense panicle. The rootstock is very thick and reaches deep down into the soil.

C. Leaves very large and thin and light green, two to four times longer than broad, with the basal lobes directed downwards and inwards..... **Rumex ambiguus** Gren.
(Syn.: *Rumex Acetosa hortensis*)

C. Leaves very long and dark green, at least four and up to fourteen times longer than broad, distinctly spearshaped with the basal lobes directed outwards..... **Rumex thyrsoflorus** Fingerh.

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